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# ETHNOENTOMOLOGY OF THE CENTRAL KALAHARI SAN

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ABSTRACT The Central Kalahari San use many kinds of insects for daily food and materials and as children's play things. This study describes how several insect species are used, which often follows a series of processes from collecting to consumption and the quite diversified insect utilization based on various skills and knowledge in ethnoentomology. Even though insects are not an important subsistence resource, the San have an extensive knowledge and make good use of insects. The insects even spice up the San daily life.

Key words: insects, ethnoentomology, diversified utilization, food, material, children's play

## INTRODUCTION

The San are known to use many kinds of natural resources and possess great knowledge of nature (Lee, 1979; Tanaka, 1980; Silberbauer, 1981). The principle objectives of San studies have focused on the hunting and gathering subsistence system. Although these studies detailed the uses of various resources, little attention has been paid to the uses of marginal resources, which I believe are essential in discussing the San's deep and broad knowledge of nature. This paper will describe their extensive knowledge of insects. Through my research, I found that the San are usually in contact with insects in their daily lives and interact with them in various ways. The interaction between human and insects covers a wide range of issues including folk taxonomy, knowledge, and cognition, concerning insects used by the people (Posey, 1986).

Some previous studies have dealt with the relationship between the San and insects. As for the Dobe, some 70 species of insects are known to the !Kung. Especially, mantis is important for the body of myths (Yellen and Lee, 1976: 37), and edible insects, such as ant lion, click beetles, caterpillars, and wild honeybees, are considered delicacies. But insects do not play an important role in the diet (Lee, 1979: 101-102). As for the |Gui, termites, caterpillars, ants and wild honeybees are important invertebrates for food (Silberbauer, 1981: 216-217). Some of these insects are also eaten among other San groups (Trail, 1994). It is well-known that the larva of chrysomelid beetles (*Diamphidia* sp.) is used as poison on arrows to kill game. But there are no further studies which concern the San and insects.

This study has two main purposes. The first is to describe what kinds of insects the San use and how they do so[1]. By describing the use of each species as a process from collecting to consumption, I shall demonstrate the quite diversified

utilization of insects, made possible by various skills and knowledge. The second is to examine the role of insects in the lives of the San.

The subject groups of the San are the !Gui and the !!Gana living in the Xade settlement located in the Central Kalahari Game Reserve, in the Republic of Botswana. The data was collected from October 1993 to February 1994, and from December 1994 to February 1995. All these periods were during the rainy season when insects have outbreaks. The actual use of insects was observed in the context of subsistence activities in the bush, as well as of daily life within the camp. Specimens of insects were collected mainly by using a net and a lantern. I also interviewed people about names and usage as well as folk-tales which include insect characters. The principal informants were a !Gui man and a !!Gana man whom I employed as research assistants. The residents and neighbors of the camp where I stayed were interviewed occasionally. In addition I had the opportunity to briefly survey the Naro in D'kar and the !!Gana in Gyom.

The use of insects can be classified into the following 7 categories; 1) food, 2) hunting, 3) medicine, 4) everyday goods, 5) beauty, 6) decoration, and 7) children's play things.

## INSECTS AS FOOD

Eighteen kinds of insects, based on San classification, and three kinds of honey are listed as food for the San in Xade. They also use the mud inside termite mounds for brewing. In this section the methods for collecting and eating insects are described.

### Termites (Isoptera)

(1) Harvester termite (*Hodotermes mossambicus*) 'kx'âne'

This harvester termite is about 2 cm long and is the largest of all edible termites in Xade. It nests deep in the ground. Even though worker termites are seen foraging through the bush, San regard them as a useless species. As the nest is undetectable, termites can be caught only during the nuptial flights in the rainy season. Harvester termites swarm in the late afternoon after heavy showers, flying out from the ground and into the air. When termites come flying close to a camp, women dash out in the direction of the swarm, to identify the nest place. Where the termites are found, the people enlarge the hole where they come flying out, by using digging sticks and fill the hole with grass to prevent the termites from escaping. They then gather the swarm. They also pick up the mating termites before they disappear underground. A large number is gathered in a short time. Soldier and worker termites are not collected because they are less preferable due to their bitter taste. The termites are carried home and roasted in hot ash and sand. The taste is likened to that of ostrich meat, which is considered unpleasant smell, but tasty by the San. When only a small quantity of termites was caught, they are eaten raw, after removing the head and wings, by the few people. In Xade, the termites are considered an important dietary supplement

during the season (Silberbauer, 1981: 217), because of the rich protein and fat content. However, collecting periods are limited to the few climate conditions suitable for outbreaks. Also, the nests must be located near a camp in order for the termites to be easily collected by people. In the camp where I stayed, only small quantities were gathered, twice in 1993/94 and none in 1994/95.

(2) Harvester termite (*Hodotermes mossambicus.*) '!ɢâã'

Although the same species as 'kx'âne', the San, however, regard the '!ɢâã' harvester termite as different because of the size and place of origin. It is approximately 1 cm long and nests underground in the camp area but does not build a mound, so that it can be caught only during its nuptial flight in the rainy season. It emerges at dusk whether or not there was rain during the day. When the termites begin to appear, the children go and sit surrounding the hole where the termites surface, so as to pinch them as they emerge. The older children collect the termites more efficiently by using the same method as collecting 'kx'âne'. They remove the wings and eat them raw. The termites are easily caught even by children compared to 'kx'âne', because they are found in the camp areas, but in smaller quantity. For this reason it is usually snack for only the children, not the adults.

As harvester termites feed on grass, worker termites sometimes attack the San huts made with grass. Once the hut was attacked by swarms of the worker termites, it was destroyed in twelve days (as was in the example of Nakagawa's hut). The vernacular name for this worker termite is '≠qx'ãã gyíne'. The San use and extend a kind of spider ('ǁqham') webs around the hut to deter termites. But it is not much effective, and the people sometimes move the camp to another place just from the fear of the harvester termites.

(3) Termite (Isoptera, unidentified) 'ǁkə̀mǁə̆re'

This termite is caught by children at the time of the nuptial flight and eaten like '!ɢâã'. It is characterized by its slow fluttering motion. This motion has become a motif of a song and dance for the menarche ceremony.

(4) Termite (Isoptera, unidentified) 'ǁʔáme'

This termite builds a mound, so it can be found easily in the bush, while women gather plants. When they find a mound, they dig out the mound with digging sticks and pick out the nymphs inside and eat them raw. If the quantity is small, the women eat them up in a few minutes and resume their search. If the mound yields a large quantity, they will cease gathering plants and sit down to eat all day.

Women would never try to carry the whole termite mound to the camp in Xade because termites creep out and bother them. However, in Gyom, the mounds are sometimes brought home to share with family and neighbors.

## Grasshoppers (Orthoptera)

(1) Grasshopper (Acrididae, specimen was not collected) '≠kum'

A large number of grasshoppers migrate through the continent and reach Xade occasionally. As the grasshoppers appear so much throughout the area, the

San can catch them by hand easily and eat them in the camp area without going to gather them in the bush.

(2) Grasshopper (*Cyrtacanthacris tatarica*) '∓kēme'

Most grasshoppers commonly found in Xade, are called '∓kēme'. Some green types which are about 5 cm long are edible.

(3) Toad grasshopper (*Lamarckiana cucullata*) 'gyûu∓kēme'

This grasshopper is about 5 cm long and is the biggest of all the edible grasshoppers in Xade. The word 'gyûu' of 'gyûu∓kēme' denotes the eland, which is the best game for the San.

When the rainy season sets in, grasshoppers of (1) and (2) emerge. It is difficult to find grasshoppers in the daytime as they rest in the bush, but in the morning and late afternoon they are found clinging to trees and huts. There they are easily picked off one by one with hand, gathered usually by women.

The process of cooking the above grasshoppers is as follows. All the legs are removed before roasting in the hot ash and sand. It takes only about one or two minutes to cook them. The head is picked off and the internal organs removed as well, as they are considered to be excrement. The rest is then eaten. In another method, the Naro in D'kar make grasshopper powder by pounding them in a mortar, to mix it with maize flour in porridge.

The outbreak of grasshoppers is affected by climatic conditions. During the drought there are few outbreaks.

Before the government started to ration maize flour, grasshoppers were eaten quite a lot, but nowadays, it is said that even in season, most people would not enjoy eating them as they dislike the grassy odor. Only the elderly who once ate them may. When I asked the people how grasshoppers were eaten, they were only willing to demonstrate, but not consume.

(4) Armoured ground cricket (*Acanthoplus* sp.) '∓ǂǎna'

The armored ground cricket is approximately 3 cm long and has thorns on its back. The crickets emerge from grassy areas usually after the mid-rainy season. One old man said that his father and some other men have tried eating the cricket, when they were rich in food in the bountiful season. When they took the thorns off the back of the crickets to eat, they noticed some juices oozing out. The juices were regarded to be the same as '‖nûi', which originally meant oil or fat. So they boiled the crickets in a pan made of watermelon (tsama melon) not to lose the juices and ate the concoction (Interviewed by Nakagawa). Afterwards, some of the bushmen had troubles with their bowels. They learned from this experience and never ate armored ground crickets again. This episode shows how the people experiment with a potentially new food. From this, three interesting points can be drawn. The first is the season for experimentation. They experimented in the bountiful season, not in times of need. Secondly, men tried the new food. Although women usually gather and cook grasshoppers, the men tried the crickets all by themselves. The third point is the method of preparation. The juices of the cricket seemed to be fatty, so were boiled whereas grasshoppers were generally roasted. Fatty foods are the favorites among the San. It is possible to assume that they chose a cooking method which made best use of the ingredient.

## Beetle (Coleoptera)

Buprestid beetle (*Sternocea orrisa*) 'ǁgo̧axàmkútsúro'

This buprestid beetle is about 4 cm long. The imago is eaten. The outbreaks usually occur in January. On hot days, large numbers are found feeding on the leaves of *Acacia mellifera* and *Kyllinga alba*. Women pick them up one by one by hand and pick off the legs to prevent escape, and place them in karosses (fur blankets) to take home. Any number of beetles in a tree can be easily collected in a short time. Any amount is collected, even if there are only a few. The quarry is roasted in the hot ash and sand, and then their hard wings are removed. The heads are picked off when they are eaten directly. Some people remove the internal organs considered to be excrement. Sometimes the beetles are pounded and mixed with fruits or wild plants in a mortar to form a paste. People consider this beetle delicious. Especially, they liken the taste of a female containing eggs to that of roasted eland meat. The interesting point is that the beetle paste is made in a relatively elaborate manner, demonstrating that the San actually cook to enjoy texture and taste by mixing different ingredients together.

The San in Xade believe that the cicada ('zaẽ', *Munzanear laticlavia*) changes into 'ǁgõaxàmkútsúro' in the rainy season, and then change into crickets ('ǀqariǀqari', *Gryllus bimaculatus*).

## Caterpillar

(1) Hawk moth (*Herse convolvuli*[(2)]) 'gyûu!nŏo'

The hawk moth caterpillar feeds on *Ipomoea* sp. Its approximate length is 7 cm. 'gyûu!nŏo' means eland caterpillar. Due to its good taste and fatness, it is likened to eland, the favorite game animal. Large outbreaks occur in late January to February when *Ipomoea* grass sprout. As *Ipomoea* colonies settle, the 'gyûu!nŏo' emerging sites are also localized. At the beginning of the outbreak, the site is limited, but afterwards it spreads quickly over various places. Once a site is discovered, women go and gather there. They stay at a make-shift camp and stay for several days to collect as many caterpillars as they can. Before the San started the sedentary life, the caterpillar was one of the main reasons for setting up a camp, indicating its importance in the diet (Silberbauer, 1981: 217).

The women squeeze out the caterpillar intestines regarded as feces by using the fingers, one by one. Then the caterpillars are roasted in the hot ash and sand. After sundrying, they are stored in bags in the hut. Dried caterpillars are occasionally eaten for several months until they run out. The people eat enough roasted caterpillars to suffice for one meal. In another cooking method, the roasted caterpillars are pounded into powder and mixed together with stewed watermelon (tsama melon) or maize meal. In this way, 'gyûu!nŏo', whose taste is similar to that of roasted eland meat, lends its flavor to make other food delicious. The data provided by other researchers help in estimating the quantity collected. Ikeya (1994: 105) recorded that about ten women set up a camp for caterpillar collection and devoted two and a half days to collect them. The amount accumulated by one woman was about 15kg. Imamura (1992: 56)

reported that the quantity collected by a woman at one time was about 1 kg in 1991. In my research period, only a small quantity was collected in 1994 and there was no outbreak in 1995. The place and size of the outbreaks fluctuate with the climatic conditions. Although it is an important food resource in Xade, annual fluctuations in the harvest make this resource unreliable.

The San in Xade believe that 'gyûu!nŏo cìecìbe' (hawk moth) bears 'gyûu-!nŏo', then it goes underground and changes into a black scorpion. Its vernacular name is 'ǀkeeǁqx'ari', meaning the wildebeast scorpion.

(2) Hawk moth (Sphingidae) '!gǫne'

This caterpillar feeds on the leaves of Leguminosae trees (*Lonchocarpus nelsii*). Outbreaks occur when the rainy season sets in and the fresh green of the host plant flourishes. Outbreaks are occasional during the rainy season. Caterpillars are collected by women in the same way as 'gyûu!nŏo'. After the intestines from the body are squeezed out, they are roasted. It is said that '!gǫne' smell bad because they absorb the grassy odor from the host plant. Therefore it has not been eaten as much since the government ration started.

The San in Xade believe '!gǫne' goes through the same metamorphosis as 'gyûu!nŏo', although it changes into 'ǁqx'ari' after it burrows underground. 'ǁqx'ari' is a kind of white scorpion, less poisonous than that of 'gyûu!nŏo'.

(3) Noctuid moth (Noctuidae) 'cúrugú'

As this caterpillar feeds on the same host plant as '!gǫne', it also smells grassy. At present, it is not particularly sought after. It is so thin that the intestines, rather than squeezed out one by one, are removed by the dozen (as they are thought to be excrement), held on the palm and then roasted.

(4) Emperor moth (Saturniidae) '∓qx'áiǁxâne'

This caterpillar feeds on the leaves of acacia trees. (The San say *Acacia mellifera* and *Acacia erioloba* are its host plant). They emerge following a heavy rainfall during the mid-rainy season. It is cooked in the same way as the other caterpillars. The people regard it a delicacy, but there are not many opportunities to eat it because of its seasonality.

(5) Pupa of lasiocampid moth (Lasiocampidae) 'ǀgírí'

This is a pupa moth. Its cocoon is easily found hanging from branches in the woodland. Two sizes of cocoons can be observed, and the larger one is used for food and the smaller one as a rattle described in the next section. Its surface is covered with prickly spines, removed by rubbing it with grass, before the collector removes it from the branch. The cocoons are put over fire to cook, and the pupa inside is taken out and eaten. The pupa is also a delicacy. In the past, pupa could be easily found in the Xade area, but nowadays it is scarce (Interviewed by Nakagawa).

(6) Caterpillars (Specimens are not collected) 'ǀqhōre' and 'ǁgǫa'

These two kinds of caterpillar are said to be eaten. They feed on the same leaf of a tree (*Terminalia sericea*). It is said that 'ǀqhōre' is as large as a digging stick in diameter and covered with spines. The people claim that even though it is prickly, they do not hesitate to eat it roasted because of its great taste. In contrast, they say 'ǁgǫa' has an acidic taste to it. It is so small that its excrement cannot be taken out, and the people swallow it raw.

Both caterpillars emerge only in the heavy rainy season. Since both my research periods encountered droughts, no outbreak occurred.

## Ants (Hymenoptera)

Formicine ants (*Camponotus* sp.) 'ǀkhàã' and '!gǫ̀re'

Two kinds of ants are eaten. During an interview, I was told that both were edible, but actually, 'ǀkhàã' alone was always collected for food. While gathering plants, women would glance down at the bottom of shrubs in search of ants. Drained sand is the sign of an active nest. Once a nest is found, it is poked with a digging stick, then the ground around the nest is tapped by hand. They say that ants react to the patting sound, because of the disturbance, and exit the nest in order to attack (Skaife, 1980: 255) This is how the ants are collected, coming out of the nest. But this process must be conducted quickly in order to avoid the painful bites of the ants. Sometimes only a handful of the ants are caught. But generally, ants are wrapped up with grass gathered from nearby, and taken home. At the camp, they pound wild plants with a mortar and near the end of the process, the ants are mixed in. This mixture is used in a handful of salad. When the ants are put into the salad, formicine soaks into the salad and adds a sweet-sour flavor which enhances the taste of the plants. The people evaluate its taste as salty and delicious. As far as I know, previous studies on the San diet have not mentioned seasoning, but this usage demonstrates that ǀGui and ǁGana people like to add acidic flavoring to their food. For this reason, they take the trouble to carry ants home, no matter how few.

## Honey

Honey is a superb delicacy. Three varieties of honey are consumed by the San.

(1) Honeybee (Apidae, unidentified) 'gyĭne'

The honeybee nests in the hollow of a tree trunk. The people occasionally come across beehives when they go into the woodland[3], but there are other ways to find them: by running after a bee eater ('gyûuqăm', *Merops hirundineus*), or tracing the footprints of the honey badger ('!narosi', *Mellivora capensis*). When the beehive is small with yet an insufficient amount of honey, the discoverer ties a grass tag to the tree to show that the hive has already been claimed. This device, 'to mark for the claim', is designated by one verb, 'ǀkhêe'.

Honey is gathered by the following skillful method: First, a collector blows smoke into the mouth of the hollow and paralyzes the bees. Then he enlarges the hollow with an adze and takes out the honeycombs. In the past, when the San had no adze, the root of the tree with the beehive was burnt to fell the tree.

Usually the people fear the bee because of its painful sting, but to obtain honey, they do not shrink away, because honey has a very sweet taste that no other food can replace. It is the superb treat for all. Honey was also indispensable for homebrewing before sugar became available through ration or purchase. To brew honey it is put into a bucket with yeast, as described later. It is then fermented (for more information, see Tanaka, 1980: 39)

(2) Leafcutter bee (*Megachile* sp.) 'gõõgò'

The leafcutter bee nests in a hollow stem and makes a thick paste of honey. When people chop firewood, beehives are sometimes found and then extracted. The honey is very sweet but is found in very small quantities, therefore it is given to children for them to share among themselves by taking turns licking it.

(3) Anthophorid bee (Anthophoridae) '!gǫ̀amagàgá'

This bee nests underground. The mouth of the nest is found on the surface of the earth in a field around the camp where children would search. Once found, it is dug out using a digging stick and hands. The collector can conduct this process safely because this bee dose not attack a man. The honey, however, is so thin that it is left to be gathered and eaten as snacks by children.

### Liquor Yeast

Mud from termite mounds (Isoptera, unidentified) '!?oma'

The mud inside one kind of termite mound is used for the yeast to make liquor. It is indispensable for the brewing. This method was imported by the Kgalagadi (Tanaka, 1980: 39). The San people did not have the knowledge until then. The mound is broken with a hoe and the mud inside is dug out. The mound is not found in Xade area, but as it had been found in other areas, for example '!koae', where some of them lived before settlements, people know where to obtain it. The mud can be used repeatedly for a long time. The mud is exchanged among the San for various items or labor.

## INSECTS AS MATERIAL FOR DAILY LIFE

### Insects use in hunting

(1) Chrysomelid beetle (*Diamphidia simplex*) '‖k'óa‖kàma' for arrow poison

Before settlement, bow and arrow hunting was the most important means for the San to obtain meat. Poison was applied to the arrowhead to kill game. The poison was made from the bodily juices of larva from the chrysomelid beetle. It is a slow but highly effective poison, which not only dissolves the red blood corpuscle but also damages the nervous system (Mitsuhashi, 1984: pp. 87-88). Thus this insect played an essential role in the traditional hunting technique, and this poison was utilized broadly among most San groups.

The larva of this beetle is parasitic on a root shrub of corkwood (*Commiphora africana*), and when it matures, it makes a cocoon beneath the shrub. In order to catch it, men search the areas where the shrubs grow thick, then dig the ground under the shrubs. Then they scrape the sand off by hand, and search the sand for cocoons. The cocoons found are carefully put in a cone form wooden cup so as not to be crushed, and taken to the camp. At the camp the cocoons are torn open and the larva is carefully taken out. It is tapped on a thumbnail with a forefinger. Then it is put on the palm of the hand and scrutinized. After that, each head is nipped off using a twig and the juice is squeezed into a cup. About eight

larvae are needed to prepare poison for each arrowhead (Silberbauer, 1981: p. 207). I heard that some people mixed the juice from the poisonous spider ('cem!kào', unidentified) or spider wasp (|gǫ̀ri, Pompilidae) together with that of the beetle to intensify the poison. Some root (*Indigofera* sp., *Coccinia rehmannii* etc. Tanaka, 1980: 45) and saliva are added into the cup to make a pasty consistency. But if only a few larvae were collected, their juice alone would be used. The poisonous liquid is applied using a tiny wooden pestle onto the shaft of an arrow head where some sinew of Gemsbok is wound to soak up the poison. Once the poison is applied, it is dried, and reapplied for a good coat. Finally, a larva is roasted, to make a stick concoction, and dabbed on directly. It takes approximately fifty minutes to prepare an arrowhead with this method. (For further discussion of various aspects of poison, see Lee, 1979: 133-135; Tanaka, 1980: 45; Silberbauer, 1981: 207-208; Liebenberg, 1990: 58)

(2) Winged ant (Formicidae) '∓kum∓kùm' used for reinforcement of the arrow shaft

An arrow shaft is made from the reed of plants which easily split along the axial fiber. In order to prevent this from happening, a paste made from ants is applied to the arrow shaft as reinforcement. A swarm of winged ants named '∓kum∓kùm' are collected from the trees where they seek shelter to avoid low temperatures in the cold and dry season, and are ground to a paste. It is then coated thickly on a stick and once the paste has dried to stiffen, it is rubbed onto the arrow shaft.

(3) Termite (Isoptera, unidentified) '||ʔáme' as bait for snare hunting

The Burchell's glossy starling ('zŭbu', *Lamprotornis australis*) is hunted by a rope snare. To lure it, a termite mound is used. This termite is the same as that which was described as food. A mound is carried to the habitat of the bird, and the rope snare is set up around the mound. The mound is burned and gives off the smell of termites. It is said that the bird is attracted to its smell.

For Medicine

Bagworm (Psychidae) 'k'aarí'

As far as I know, there is only one insect used for medicine, the bagworm. Its bodily juices are applied to the afflicted area by stomatitis, usually affecting children.

Everyday goods

Gall (unidentified) '|gâa!xôo' for pipes

The gall of a tree (*Terminalia sericea*) is used to make a tobacco pipe, using the hole bored by the imago to let the air flow. The gall with the insect still inside is most suited for making the pipe. The gall is cut from the branch, the tip is cut open, and the inside is cleared out in order to make room for the tobacco, then a new tip and a mouth piece for smoking is added on.

Nowadays, tin, more suitable for pipes, is readily available in Xade and becoming more popular and replacing the gall pipes.

For Beauty

Stink bug (*Agonoscelis erosa*) '!nhàya' for lotion

Stink bugs were used by the women as a lotion not so long ago. Dozens of bugs could be collected from trees where they took shelter from the cold. They were smashed in the palm or in a cup made of watermelon (tsama melon) with some water melon pulp. The grease from the bug and the watermelon were mixed well to make a lotion. Women applied this to their body to help scrape off dirt. But men never did this. Generally, bugs are disliked by most people because of their bad smell. Nevertheless women still used it in order to maintain their beauty.

Nowadays, as the people in Xade can use water from the deep-drilled well any time, the women do not use the bug lotion any longer.

For Decoration

(1) Bulb weevils (Curculionidae) '!náe‖kàma' as ornament

The bulb weevil with a round body is hung from the waist by the women. At first, it is still alive, but later when it dies, it turns hard and glossy, making for a good ornament.

(2) Egg mass of mantis (Mantidae) '|qx'ân a ǂkao' for necklace

The egg mass of a mantis is used as a necklace by the women. The literary meaning of the vernacular for the mantis egg mass is 'dirty heart', an idiomatic expression of distrust toward others. In spite of this negative connotation, women are very willing to wear this necklace. The round form of the egg mass seems to be cherished.

(3) Cocoon of lasiocampid moth (Lasiocampidae) '|gíri', for rattles

Cocoons of the lasiocampid moth are used as ankle rattles for traditional dances by witch doctors. Cocoons are taken from the branch of a tree in the same way as food, described above. After a cocoon is cut open, the pupa is removed, then egg husks of an ostrich or small stones are placed inside the cocoon. Dozens of cocoons are then strung together and a pair is put on each leg of the witch doctor. This rattles each time the doctor takes a step.

Another use of cocoons is that of a bracelet for babies. The bracelet is worn on the baby's right wrist as a marker to teach it the right hand.

## INSECTS USED FOR CHILDREN'S PLAY

Butterfly and moth (Lepidoptera)

(1) The pupa of white butterfly (*Belenois* sp.) 'cìecìbe'[4]

Children pick up the pupae of white butterflies from the branches of *Boscia albitrunca*. When they hold a pupa between their fingers it wiggles around. The wiggling is funny for the children and they shout, 'Ghanzi, Ghanzi,' in time with the movement. Ghanzi is the name of a town about 170 km away from Xade,

and their shouting is supposed to show the pupa the direction. In Japan "Dottchi dottchi" is shouted in a similar play with a pupa. "Dottchi" means, "which is the direction?".

(2) White butterflies (*Belenois sp.*) 'cìecìbe' on twigs

As butterflies emerge in large numbers, children can easily collect them by hand. Children stand a twig on the ground and make the butterflies hold onto it. When they try to fly and fail, children enjoy watching their struggle.

(3) Butterflies and moths 'cìecìbe'

The fluttering of butterflies and moths makes a buzzing and windy sound, which is fun for the children to hear. In the evening, moths will fly to an open fire. The adults catch the moths and hold them close to children's ears so they can hear their fluttering sound. In the day time, children enjoy catching butterflies themselves.

Ants (Formicidae)

Winged driver ant (*Dorylus* sp.) '!nòa|kérogu'

Children will catch the winged driver ants which sometimes fly into the camp. On catching one, they insert a twig in its anus, which they stick into the ground. The ant then bends its abdomen up and down slowly while flapping its wings. The children watch the movement and sing a song about the ant, "!nòa|kérogu è tsá cíaxosì !kāe qoru tsàm tsháasa kx'âa." The song roughly translates to, "let's take off the sister's skirt and drink her urine together."

Beetles (Coleoptera)

(1) Beetles

Such beetles as '‖kàma' (*Kheper prodigiosus*) and '≠gŏo|?oātsuritsùri' (*Trox* sp.) are found wandering on the ground in the camp. Children will collect the beetles and scatter them over the ground all at once. They enjoy watching the many beetles scatter about in all directions.

(2) Dung beetles (*Kheper prodigiosus*) '‖kàma'

The children tie up the dung beetle so that it moves about desperately. The movement is enjoyed with a song for the beetles, "≠gìi è ‖noa è cà cìre ci meē è cŭakx'am kà !garusà sâō è," marveling at its magnificently wide head, its hardness as a rock, and its posture on the dung .

(3) Blister beetle (*Cylindrothorax thoracicus*) '‖nąn‖gám‖kàma'

There are many blister beetles on the ground in a camp. Its juices cause inflammation of the skin. It is so poisonous that if someone should lie carelessly on the sand and should crush it, the back will be inflamed badly. However, girls use it for markings on their skin. When the head is picked off, poisonous juices flow out, and it is dabbed on the skin as spots. These skin paintings have no apparent purpose but are simply for play and decoration.

Grasshoppers (Orthoptera)

Grasshopper (*Acrotylus* sp.) '∓kēme'

Small grasshoppers found at camps are used as targets for children's toy bows and arrows made with twigs. Children chase the grasshoppers and aim at them. The grasshoppers stand still and are easy to aim at. Some have soft bodies which are easily penetrated by the twig arrow. This play serves as the first step in training for hunting.

## DISCUSSION

Many insects are categorized as useless things, 'góõwahá', by the ǀGui and the ǁGana people (see Tanaka this volume). The people even laughed at me because I was so interested in insects and eagerly collected them. Many previous studies about the San also suffered from a bias that held insects to be useless, or marginal to the San subsistence and cognition of nature. They are based on the assumption that insects are too negligible as food from the quantitative viewpoint of ecological anthropology, or the foraging economy of hunter-gatherers. It may seem evident that the contribution of insects to the diet as a resource is limited by the following characteristics: a) seasonal concentration, b) annual fluctuation, and c) low cost benefit ratio, i.e., the caloric intake from the insects to the caloric consumption required to collect them. It is suggestive, however, that insects as food are reported to be rich in protein and fat (Bodenheimer, 1951). Insects could be used as a main source of protein intake such as the example of the Yukpa-Yuko in Venezuela and Colombia (Ruddle, 1973). So high protein and fat is another characteristic of insects. With these studies and my investigation, I have concluded that insects are a potentially important dietary resource at least in certain season or situations. As described the preceding sections, in Xade 'gyûu!nŏo' (caterpillar of hawk moth), 'kx'âne' (harvester termite), and 'ǁgōaxàmkútsúro' (buprestid beetle) are important species as food in their emerging season.

Yet, the above discussion does not justify neglecting other insects of less importance in the diet. Some of the insects can be pointed out as essential to dietary quality of the San, even though they are scarce in quantity. These valuable insects are used as spice, luxury foods and snacks. These uses have been unreasonably ignored by most studies of ecological anthropology with the primary interest in the human survival strategy. It is true that ecological anthropology has given us a new portrait of hunter-gatherers who enjoyed much leisure time as "the original affluent society" (Sahlins, 1972), but the anthropological interest in such "pleasures of life" have been limited to the communicative activities, such as socializing, folk-tales, or dances, while eating itself remained untouched as a sanctuary of "materialism." In this study emphasis was more on qualitative examination. As a result, it was revealed that edible insects in general, in spite of their scarcity, provide people's diets with more "spice" than "substance," in their "struggle for survival."

Moreover, the unique characteristic features of insects, and the value concomitant with rarity play important roles on the San life as described in the preceding section. In particular, even the small amount of poison from the larvae of chrysomelid beetles plays an essential roles as arrow poison to the subsistence of the San. But the importance of this use has overshadowed the availability and uses of other insects in previous studies. However different characteristics the insects possess from mammals and plants on which the San subsistence is based, they produce various uses in the San life. Insect properties that the San exploit can be summarized as follows: a) the chemical and physical quality (such as toxicity, smell, viscosity, and stimulation), b) the external skeleton (having a hard body), c) multiformity through metamorphosis (such as pupae, cocoon, and egg mass), and d) availability at close range of human. Given these characteristics, the San use insects for hunting, medicine, beauty, decoration, everyday goods, and toys. In other words, they make good use of quite a wide range of potential inherent in the most abundant class of creatures on the earth.

The San's close relationship with insects is not only restricted to within the domain of practicality. In modern societies, insects are considered to be not only useless but harmful to agriculture, home, and human body. But in the traditional San life, most insects are not considered as enemies to human, even though the people sometimes suffer from harvester termites, ticks and poisonous insects. They would never think of exterminating even such enemies. They seem to be receptive to the existence of insects around them. Moreover, children use insects around them for convenient fun. Tapper (1988) pointed out the human familiarity with animals through the human-animal relations of productions. The San have also developed a "familiarity", but with insects rather than with animals in their daily life. With regards to the treatment and attitudes towards insects by the San the familiarity with insects is present. In order to emphasize this point, I described how children play with insects, which might seem a trivial matter for the readers. Far from it, my point is that surprisingly various San uses of insects originate from the familiarity with insects, established during childhood. Since insects are familiar entity in play, children discover and recognize the various values hidden in the useless things, 'góõwàhá'.

The San have established an unique ethnoscience on insects, some of which are demonstrated by the their belief in metamorphosis and the vernacular insect names. I hope to present further discussion on this topic in the near future.

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## NOTES

(1) Insects treated in this paper are limited to the class Insecta, and other classes of arthropoda are excluded.
(2) The species was determined through host plants by consulting Carruthers (1982: 166), where the same host plant is identified.
(3) This name for the woodland means the patch where mainly acacia trees grow localized in the bush.
(4) 'cìecìbe' is a general name for both butterfly and moth.

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**Appendix.** List of Insects in Xade

| Order | Scientific name | \|Gui name | Common name |
|---|---|---|---|
| Diptera | Asilidae | bũrobùro | robber fly |
| | Asilidae | \|gáã-cá-ǂxábu | robber fly |
| | Asilidae | ǂgà̰aǂnhítemkà\|koã | robber fly |
| | Syrphidae | \|gɛ̃ɛ̃né | hover fly |
| | Syrphidae | \|gɛ̃ɛ̃né | hover fly |
| | Syrphidae | \|gɛ̃ɛ̃\|koã | hover fly |
| | Hippoboscidae | !kõõ | louse fly |
| | Sarcophagidae | ‖gaimka\|gɛ̃ɛ̃né | flesh fly |
| | Calliphoridae | ‖kore | blow fly |
| | unidentified | !gôoʔaba | fly |
| | unidentified | gyûa\|gɛ̃ɛ̃né | fly |
| Hymenoptera | Mutillidae* | !ʔôe\|gɛ̃ɛ̃né | velvet ant |
| | *Camponotus* sp. | \|khàã | formicine ant |
| | *Camponotus* sp. | !gò̰re | formicine ant |
| | *Camponotus* sp. | ǂkumǂkùm | winged ant |
| | Formicidae | !kúucá\|khɛ̃e\|khèe | ant |
| | Formicidae | ‖gà̰re | ant |
| | Formicidae | cyuu mka \|gɛ̃ɛ̃né | ant |
| | Formicidae | !gôoǂkomǂkòm | ant |
| | Formicidae | ǂgò̰m | ant |
| | Formicidae | símesíme | ant |
| | *Dorylus* sp. | !nòa\|kérogú | driver ant |
| | Chrysididae | tsx'ãe\|gɛ̃ɛ̃né | cuckoo wasp |
| | Pompilidae | \|kà̰ri | spider-hunting wasp |
| | *Delta lepeleteri* | \|kà̰ri | mud wasp |
| | Eumeridae* | \|kà̰ri | mud wasp |
| | Anthophoridae | !gò̰magàgá | bumble bee |
| | *Megachile* sp. | gõõgò | leafcutter bee |
| | Apidae | gy̆ine | honeybee |
| | unidentified | \|kà̰ri\|nõ | wasp |
| | unidentified | !kháb̆ikx'am\|kɔ̃be | wasp |
| | unidentified | !gômǂnèna | wasp |
| | unidentified | !ʔôe‖gámkagyibaxo | wasp |
| | unidentified | ‖nã̰n‖gã̰m‖kàma | wasp |
| | *Golafrus oneili* | \|gáãcáǂxábu | antlion |
| | *Palpares kalahariensis* | \|gáãcáǂxábu | antlion |
| | *Crambomorphus* sp. | \|gáãcáǂxábu | antlion |
| | Myrmeleontidae* | \|gáãcáǂxábu | antlion |
| | | ‖kūu | larva of antlion |
| Coleoptera | *Mantichora hercukera* | tshĭ̆ikx'aãri | tiger beetle |
| | *Anthia fabricii* | !nòamà‖gã̆m | ground beetle |
| | *Thermophilum aemiliaum* | !gáēmà‖gã̰m | ground beetle |
| | Scaritini Passalidius | !nãbets'úrots'ùro | ground beetle |

**Appendix.** (cont.)

| Order | Scientific name | \|Gui name | Common name |
|---|---|---|---|
| Coleoptera | Carabidae | ǂkénacáǂxai | carabid beetle |
| | *Cybister tripunctatus* ssp. | !nábirí | diving beetle |
| | *Kheper prodigiosus* | ‖kàma | dung beetle |
| | *Scarabaeus interstialis* | ‖kàma | dung beetle |
| | *Digithonthophagus gazella* | ‖kàma | dung beetle |
| | *Neateachus proboscidens* | ‖kàma | dung beetle |
| | *Pachylomera femoralis* | ‖kàma | dung beetle |
| | Bolboceratydae sp. | ‖kàma | dung beetle |
| | *Gymnopleaus* sp. | ‖kàma | dung beetle |
| | *Metacutharsius sp.(a)(b)* | ‖kàma | dung beetle |
| | *Trox* sp. | ǂgŏoʔoātsuritsùri | darkling beetle |
| | Dynastinae | \|hii‖kàma | rhinoceros beetle |
| | *Maladera* sp. | ǂgŏo‖kări | leaf chafer |
| | Bostrychidae | q'ôro | shot-hole borer |
| | *Sternocera orissa* | ‖go͡axàmkútsúro | jewel beetle |
| | *Acmaeodera smaragdina* | tsx'ãe‖kàma | jewel beetle |
| | Buprestidae | \|gâa‖kàma | jewel beetle |
| | Buprestidae | \|gâa!nooka‖kàmamkakiyaaxo | jewel beetle |
| | *Tetralobaus rotundifrons* | !kâo‖kàma | click beetle |
| | Elateridae* | ǂgee‖kàma | click beetle |
| | *Cheilomenes* sp. | tshĕrerè | ladybird |
| | Coccinellidae | tshĕrerè | ladybird |
| | Molorinae | !gáēǂkao | toktokkie |
| | *Himatismus* sp. | ‖koeʔò\|qx'ān\|qx'àn | toktokkie |
| | *Phanaroteromea* sp. | !noaǂkao | toktokkie |
| | *Gonopus* sp. | \|gàarí | toktokkie |
| | Tenebrionidae | xom‖nòoxòro | toktokkie |
| | *Psammodes vialis* | !ʔúu!ʔú!no͡ne | toktokkie |
| | Tenebrionidae | gena‖kàma | toktokkie |
| | *Cylindrothorax thoracicus* | ‖nă͡n‖gám‖kàma | blister beetle |
| | Cerambycidae | \|hii‖kàma | long-horn beetle |
| | Cerambycidae | !kòokx'ōākx'òā | long-horn beetle |
| | Cerambycidae* | !q'âba‖nâā | long-horn beetle |
| | Cerambycidae | ‖xoo‖kàmamkakoa | long-horn beetle |
| | *Diamphidia simplex* | ‖k'óa‖kàma | leaf beetle |
| | Chrysomelidae | tshĭikx'àri | leaf beetle |
| | Chrysomelidae | ‖nă͡n‖gă͡m‖kàma | leaf beetle |
| | *Brachycerus tursio* | !náe‖kàma | weevil |
| | Curculionidae* | ‖xoo‖kàma | weevil |
| | Curculionidae | ‖gă͡nts'í | weevil |
| | Curculionidae | ‖koeʔò\|qx'ān\|qx'àn | weevil |
| | Curculionidae | ‖xoo‖kàmamka\|koā | weevil |
| | Curculionidae | ‖qawa‖kàma | weevil |

**Appendix.** (cont.)

| Order | Scientific name | \|Gui name | Common name |
|---|---|---|---|
| Coleoptera | Curculionidae | ‖khâyā‖kàma | weevil |
| | Curculionidae | ǂkomǂkòm‖gobo | weevil |
| | unidentified | !ʔôe‖kàma | beetle |
| | unidentified | ‖xoo‖kàma | beetle |
| | unidentified | kx'óm‖kàma | beetle |
| | unidentified | tsx'āe‖kàma | beetle |
| | unidentified | ‖nǟu‖kàma | beetle |
| | unidentified | ‖kǭa‖kǭri | beetle |
| | unidentified | tshĕreré | beetle |
| Mantodea | Mantidae* | pǐiśǐ\|koagú | mantis |
| | | \|qx'ânàǂkao | mantis egg mass |
| Phasmatodea | Necrosciidae | ‖nhŏā | stick insect |
| | Necrosciidae | \|gáācáǀxábu | stick insect |
| Blattodea | *Derocalymma* sp. | ‖nābocáǂkhāāǂkhàā | cockroach |
| | unidentified | \|kǟm\|kǟrimkagyibaxo | cockroach |
| | unidentified | hèyahĕbakx'ò | cockroach |
| Orthoptera | *Gryllus bimaculatus* | \|qari\|qari | mediterranean field cricket |
| | Gryllidae | tsaōtsaō | cricket |
| | Gryllidae | \|kǟm\|kǟri | cricket |
| | *Acanthoplus* sp. | ǂgănа | armoured ground cricket |
| | Tettigoniidae | tsháaǂkēme | long horned grasshopper |
| | *Comicus* sp. | ‖qari‖qari | dune cricket |
| | Enepteridae | ‖gǟmkuri | cricket |
| | Enepteridae | \|kǟm\|kǟri | cricket |
| | *Lamarckiana cucullata* | gyûuǂkēme | toad grasshopper |
| | *Cyrtacanthacris tatarica* | ǂkēme | grasshopper |
| | Acrididae* | ǂkēme | grasshopper |
| | Saginae | !kâoǂkēme | grasshopper |
| | *Zonocerus* sp. | ‖kón‖kón | elegant grasshopper |
| | unidentified | \|kéne | grasshopper |
| | unidentified | ǂgǐicáǂkēme | grasshopper |
| | unidentified | ǂkum | grasshopper |
| | unidentified | ‖qāraxòbá | grasshopper |
| | unidentified | ‖xāmaǂkēme | grasshopper |
| | unidentified | \|keeǂkēme | grasshopper |
| | unidentified | ǂgeyā | grasshopper |
| | unidentified | ‖nûiǂkēme | grasshopper |
| | unidentified | ǂnĕratàm‖gǟe | grasshopper |
| Isoptera | *Hodotermes mossambicus* | kx'âne | harvester termite |
| | *Hodotermes mossambicus* | !gāā | harvester termite |
| | | ǂqx'aāgyíne | worker of harvester termite |
| | unidentified | ‖kǟm‖kǟre | termite |
| | unidentified | \|ʔáme | termite |

**Appendix.** (cont.)

| Order | Scientific name | \|Gui name | Common name |
|---|---|---|---|
| Isoptera | unidentified | ‖kąbe | termite |
| | unidentified | tx'am | termite |
| Hemiptera | Pentatomidae* | tshĕrerè | stink bug |
| | Pentatomidae | genaa‖kàma | stink bug |
| | *Agonoscelis erosa* | !nhàya | stink bug |
| | Scutelleridae | ‖nąn≠qàba | scutellerid bug |
| | Reduviidae | tsháa?ò\|gĕēné | assassin bug |
| | Coreidae | tshĕrerè | twig wilter bug |
| | Gerridae | tsháa?ò\|gĕēné | water strider |
| | *Munzanear laticlavia* | zą̄ē | cicada |
| | | !koo!kò | larva of cicada |
| Lepidoptera | *Belrnois** | cìecìbe | white |
| | *Catopsila florella* | cìecìbe | african migrant |
| | *Eurema brigitta* | ‖kàmts'ásĭkacèecèbe | broadbordered grass yellow |
| | *Danaus chryppus* | ‖xânemkàcèecèbe | african monarch butterfly |
| | *Byblia ilithyia* | cìecìbe | spotted joker |
| | *Junoia hierta* | cìecìbe | yellow pansy |
| | *Junoia orithya* | cìecìbe | eyed pansy |
| | *Acraea terpsichore* | cìecìbe | red |
| | *Lepidochrysops* sp. | cìecìbe | blue |
| | *Herse convolvuli* | gyuù!noocèecèbe | convolvulus hawk |
| | | gyûu!nŏo | larva of convolvulus hawk |
| | Sphingidae | !gǭne | larva of hawk moth |
| | *Cyligramma latona* | ≠qx'ái‖xânemkàcèecèbe | cream striped owl |
| | Noctuidae | cúrugú | larva of noctuid moth |
| | Saturniidae | ≠qx'ái‖xâne | larva of emperor moth |
| | Lasiocampidae | \|gírí | pupa of lasiocampid moth |
| | Psychidae | \|k'aarí | bagwarm |
| | unidentified | ?abagoramka!noo | larva of moth |
| | unidentified | ‖xoo!noo | larva of moth |
| | unidentified | \|gâa!noo | larva of moth |
| | unidentified | !?oe!?on!?onmka!noo | larva of moth |
| | unidentified | !none!noo | larva of moth |
| | unidentified | nau!noo | larva of moth |
| | unidentified | \|qhōre | larva of moth |
| | unidentified | ‖gǭa | larva of moth |
| | unidentified | ‖kòē!noo | larva of moth |
| Phthiraptera | unidentified | qx'one | louse |
| | unidentified | \|gâa \|qx'ōā | gall |

The insects without vernacular names are excluded from this list.

* several species (unidentifed)